

## CLAIMS

What is claimed is:

- 1    1.    A method for fabricating recording head sliders made from silicon substrates with  
2    SiO<sub>2</sub> overcoats, comprising:  
3        A) providing a Si wafer which has been fabricated with a SiO<sub>2</sub> overcoat;  
4        B) depositing a layer of DRIE-resistant material on said SiO<sub>2</sub> overcoat;  
5        C) depositing a patterned layer of RIE-resistant material on said layer of DRIE-  
6    resistant material to form a primary mask;  
7        D) etching by RIE through said primary mask to pattern said SiO<sub>2</sub> overcoat layer  
8    and said layer of DRIE-resistant material;  
9        E) removing said primary mask to expose said layer of DRIE-resistant material  
10    which has now been patterned to form a secondary mask;  
11        F) etching by DRIE through said secondary mask to cut said Si wafer into pieces;  
12    and  
13        G) removing said secondary mask.
  
- 1    2.    The method of fabrication of claim 1, wherein:  
2        said RIE-resistant material is a metal.
  
- 1    3.    The method of fabrication of claim 1, wherein:  
2        said RIE-resistant material is a transition metal.

1 4. The method of fabrication of claim 1, wherein:  
2 said RIE-resistant material is chosen from the group consisting of Cu, NiFe,  
3 and...(MORE)

1 5. The method of fabrication of claim 1, wherein:  
2 said DRIE-resistant material is chosen from the group consisting of  $\text{Al}_2\text{O}_3$  and...  
3 (MORE)

1 6. The method of fabrication of claim 1, wherein:  
2 said C) depositing a patterned layer of RIE-resistant material on said layer of  
3 DRIE-resistant material to form a primary mask comprises;  
4 i) applying, exposing and developing photoresist to create the pattern;  
5 ii) plating the layer of RIE-resistant material into the photo-resist pattern; and  
6 iii) stripping the photo-resist.

1 7. The method of fabrication of claim 6, wherein said C) depositing a patterned layer  
2 of RIE-resistant material on said layer of DRIE-resistant material to form a primary mask  
3 further comprises;  
4 applying a seed layer of RIE-resistant material before applying said photoresist.

1 8. The method of fabrication of claim 7, wherein:  
2 said D) etching by RIE further comprises:

3 first sputter-etching away said seed layer of RIE-resistant material before  
4 RIE.

1 9. The method of fabrication of claim 1, wherein:  
2 said E) removing said primary mask is done by selective wet etching.

1 10. The method of fabrication of claim 1, wherein:  
2 said F) removing said secondary mask is done by selective wet etching.

1 11. A method for fabricating recording head sliders made from silicon substrates,  
2 comprising:

3 A) producing a SiO<sub>2</sub> overcoat on said Si wafer;

4 B) depositing a layer of DRIE-resistant material on said SiO<sub>2</sub> overcoat;

5 C) depositing a RIE mask on said layer of DRIE-resistant material;

6 D) etching by RIE through said RIE mask to pattern said SiO<sub>2</sub> overcoat layer and  
7 form a DRIE mask from said DRIE-resistant material;

8 E) removing said RIE mask to expose said DRIE mask;

9 F) etching by DRIE through said DRIE mask to cut said Si wafer; and

10 G) removing said DRIE mask.

1 12. The method of fabrication of claim 11, wherein:  
2 said RIE-resistant material is a metal.

1 13. The method of fabrication of claim 11, wherein:

2 said RIE-resistant material is a transition metal.

1 14. The method of fabrication of claim 11, wherein:

2 said RIE-resistant material is chosen from the group consisting of Cu, NiFe,

3 and...(MORE)

1 15. The method of fabrication of claim 11, wherein:

2 said DRIE-resistant material is chosen from the group consisting of  $\text{Al}_2\text{O}_3$  and...

3 (MORE)

1 16. The method of fabrication of claim 11, wherein:

2 C) depositing a RIE mask on said layer of DRIE-resistant material comprises;

3 i) applying, exposing and developing photoresist to create the pattern;

4 ii) plating the layer of RIE-resistant material into the photo-resist pattern;

5 and

6 iii) stripping the photo-resist.

1 17. The method of fabrication of claim 16, wherein:

2 C) depositing a RIE mask on said layer of DRIE-resistant material further  
3 comprises:

4 i) applying a seed layer of RIE-resistant material before applying said  
5 photoresist.

1 18. The method of fabrication of claim 17, wherein:  
2 said D) etching by RIE further comprises:  
3 first sputter-etching away said seed layer of RIE-resistant material before  
4 RIE.

1 19. The method of fabrication of claim 11, wherein:  
2 said E) removing said RIE mask is done by selective wet etching.

1 20. The method of fabrication of claim 11, wherein:  
2 said F) removing said DRIE mask is done by selective wet etching.